PATENT ABSTRACTS OF JAPAN

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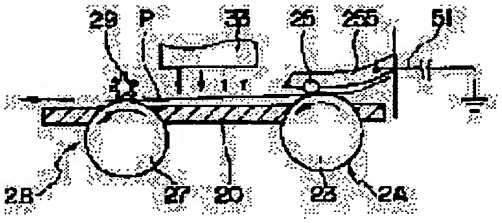
(54) INK JET RECORDING DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To efficiently eliminate static electricity from a charged recording paper while being transported prior to the execution of recording by a recording head.
SOLUTION: A pinch roll 25 to be brought into pressure contact with a transfer roll 23, which is arranged on the upstream side of an ink jetting part 33 of a recording head, and a retainer 255 for retaining the pinch roll 25 made of an electrically conductive material, are electrically grounded through a frame. A charged recording paper P is transferred in such a way that it is pinched between the transfer roll 23 and the electrically conductive pinch roll 25 which hangs on the transport roll 23, and consequently, is destaticized. Since a relatively low potential state is generated under the ink jet part 33 of the recording head, fly of jetted ink becomes stable, resulting in the prevention of a print disorder on a recording medium from occurring.



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CLAIMS

[Claim(s)]
[Claim 1] The ink discharge part of the recording head which carries out the regurgitation of the ink, and this recording head is countered. In the ink jet recording device which has the conveyance means of the record medium which prepares and arranges a gap between ink discharge parts, breathes out ink on the record medium which has said conveyance means top conveyed, and performs record It is the ink jet recording device which the conveyance means of said record medium is equipped with the conveyance section which conveys the record medium sent out from the feed section in the recording head lower part, and consists of conductive material while said conveyance section is arranged near the upstream of an ink discharge part, and it comes to ground electrically.
[Claim 2] It is the ink jet recording device according to claim 1 which said conveyance section has the pinch roll which carries out a pressure welding to a conveyance roll and a conveyance roll, and the maintenance means of a pinch roll, the pinch roll which contacts a record medium at least consists of conductive material, and it comes to ground electrically.
[Claim 3] The ink discharge part of the recording head which carries out the regurgitation of the ink, and this recording head is countered. In the ink jet recording device which has the conveyance means of the record medium which prepares and arranges a gap between ink discharge parts, breathes out ink on the record medium which has said conveyance means top conveyed, and performs record While the conveyance means of said record medium is equipped with the conveyance section which conveys the record medium sent out from the feed section in the recording head lower part and said conveyance section is arranged near the upstream of an ink discharge part It is the ink jet recording device which an electric discharge brush is arranged between the conveyance section and a recording head, and said electric discharge brush is grounded electrically, and is arranged at least so that a tip may contact the record-medium side conveyed.
[Claim 4] Said electric discharge brush is an ink jet recording device according to claim 3 which it comes to arrange on the conveyance path of the record medium of the downstream of the conveyance section. [two or more]
[Claim 5] Said electric discharge brush is an ink jet recording device according to claim 3 which contact the tip to a record medium and it comes to arrange in the downstream of the conveyance section which consists of conductive material.
[Claim 6] The ink discharge part of the recording head which carries out the regurgitation of the ink, and this recording head is countered. In the ink jet recording device which has the conveyance means of the record medium which prepares and arranges a gap between ink discharge parts, breathes out ink on the record medium which has said conveyance means top conveyed, and performs record While the conveyance means of said record medium consists of the roll which supports a belt, a belt laid by the roll free [rotation], and a pinch roll which carries out a pressure welding to a roll through a belt and a pinch roll at least consists of conductive material The record medium which is grounded electrically and sent out from the feed section is an ink jet recording device which constitutes and becomes so that electricity may be pinched and discharged between a belt and a pinch roll and it may be conveyed by the

recording head lower part.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] Especially this invention relates to the electric discharge device of the record form in the conveyance path of a record medium about an ink jet recording device.
[0002]
[Description of the Prior Art] conventionally , electric discharge of the conveyance path in the ink jet recording device which record to record media (it be hereafter describe as a detail paper) , such as paper and a sheet for OHP , prepare the interior material of a transit proposal of a detail paper in the tooth back section of the field which counter the ink discharge part of the detail paper convey by the conveyance means , and have some which used this member as the conductive ingredient as indicate by JP,4-90354,A .
[0003]
[Problem(s) to be Solved by the Invention] In order to convey the recording paper, a feed roller, a conveyance roller, a delivery roller, etc. are used, but in order to convey the recording paper, the energization device in which the conveyance force (frictional force) is given is [in / an ink jet recording device] required between a roller and the recording paper. Thus, although the recording paper which was able to give the conveyance force turned a conveyance on the street to the ink discharge part from feed opening and was conveyed, as a chute member which forms a conveyance way, resin material was used for it from fields, such as workability ability and cost, in many cases. When the recording paper ran in the road [conveyance] it is formed by resin material, friction arose between the recording paper, a chute member, etc., and there was a case where the recording paper was electrified with static electricity.
[0004] If the recording paper in the condition of having been electrified by static electricity arrives at the Records Department and record in regurgitation ink is performed When two or more ink grains are breathed out by coincidence from the delivery where induction of the charge was carried out and it approached especially the moment the ink grain left the delivery Before reaching the recording paper, since the ink comrade charged in the like pole opposed and removed the locus of an aim, it might not be recorded on the position in the record paper, the configuration of the recorded alphabetic character or an image might be confused, and he might become concentration unevenness.

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TECHNICAL FIELD

[Field of the Invention] Especially this invention relates to the electric discharge device of the record form in the conveyance path of a record medium about an ink jet recording device.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] conventionally , electric discharge of the conveyance path in the ink jet recording device which record to record media (it be hereafter describe as a detail paper) , such as paper and a sheet for OHP , prepare the interior material of a transit proposal of a detail paper in the tooth back section of the field which counter the ink discharge part of the detail paper convey by the conveyance means , and have some which used this member as the conductive ingredient as indicate by JP,4-90354,A .

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EFFECT OF THE INVENTION

[Effect of the Invention] As mentioned above, according to this invention, by the ability always maintaining static electricity on a record medium at the potential of the level which printing turbulence does not generate, flight of regurgitation ink is stabilized and the printing turbulence by static electricity is prevented.

[Translation done.]

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In order to convey the recording paper, a feed roller, a conveyance roller, a delivery roller, etc. are used, but in order to convey the recording paper, the energization device in which the conveyance force (frictional force) is given is [in / an ink jet recording device] required between a roller and the recording paper. Thus, although the recording paper which was able to give the conveyance force turned a conveyance on the street to the ink discharge part from feed opening and was conveyed, as a chute member which forms a conveyance way, resin material was used for it from fields, such as workability ability and cost, in many cases. When the recording paper ran in the road [conveyance] it is formed by resin material, friction arose between the recording paper, a chute member, etc., and there was a case where the recording paper was electrified with static electricity.
[0004] If the recording paper in the condition of having been electrified by static electricity arrives at the Records Department and record in regurgitation ink is performed When two or more ink grains are breathed out by coincidence from the delivery where induction of the charge was carried out and it approached especially the moment the ink grain left the delivery Before reaching the recording paper, since the ink comrade charged in the like pole opposed and removed the locus of an aim, it might not be recorded on the position in the record paper, the configuration of the recorded alphabetic character or an image might be confused, and he might become concentration unevenness. In addition, it is called for as an experimental value that it is a time of becoming more than **1500V-**2000V mostly as potential on the record medium which the above-mentioned printing turbulence generates.

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MEANS

[Means for Solving the Problem] The ink discharge part of the recording head which carries out the regurgitation of the ink of this invention, and this recording head is countered. The ink jet recording device which has the conveyance means of the record medium which prepares and arranges a gap between ink discharge parts, breathes out ink on the record medium which has said conveyance means top conveyed, and performs record Having the conveyance section which conveys the record medium sent out from the feed section in the recording head lower part, while being arranged near the upstream of an ink discharge part, this conveyance section possesses the configuration which consists of conductive material and is grounded electrically. The conveyance section has the pinch roll which carries out a pressure welding to a conveyance roll and a conveyance roll, and the maintenance means of a pinch roll, and the pinch roll which contacts a record medium at least consists of conductive material, and, specifically, it is grounded electrically.
[0007] It has the electric discharge brush which the conveyance means of the record medium of an ink jet recording device according to claim 3 is arranged near the upstream of an ink discharge part, and is arranged between the conveyance section which conveys the record medium sent out from the feed section in the recording head lower part, and the conveyance section and a recording head, an electric discharge brush is grounded electrically, and a tip at least possesses the configuration arranged so that the record-medium side conveyed may be contacted. This electric discharge brush may be made to arrange in the downstream of the conveyance means which may arrange more than one on the conveyance path of the downstream of the conveyance section, and the 2nd record medium, and consists of conductive material.
[0008] An ink-jet recording apparatus according to claim 6 has the conveyance means which consists of the roll which supports a belt, a belt laid by the roll free [rotation], and a pinch roll which carries out a pressure welding to a roll through a belt, a pinch roll is electrically grounded while it consists of conductive material, and the record medium sent out from the feed section provides the configuration which is pinched and discharged between a belt and a pinch roll and is conveyed by the recording head lower part. [at least]
[0009]
[Embodiment of the Invention]
Gestalt of operation The example of this invention is explained with reference to 1 or less and a drawing. The schematic diagram of the ink jet recording device with which drawing 1 applies this invention, and drawing 2 are the detail drawing near [in drawing 1] the ink discharge part of a recording head. Recording devices of an ink jet method which received the signal from the outside, such as a personal computer, send out the recording paper P on a medium tray 10 to a form conveyance way with the feed roll 15. A form conveyance way consists of the 2nd conveyance means 2B which consists of conveyance means 2A, and the 1st delivery roll 27 and spur 29 which consists of the chute member 21 and the conveyance roll 23 which are arranged by the feed opening 13, and a pinch roll 25, and interior material of record-medium proposal 20 grade.
[0010] 1st conveyance means 2A is arranged in this side of the ink discharge part 33 of a

recording head 30, and the upstream, and 2nd conveyance means 2B is arranged in the downstream of the ink discharge part 33. The record form P sent out from the feed roll 15 is guided at the chute member 21, and is supplied to 1st conveyance means 2A from the feed opening 13. It is pinched by the 1st conveyance roll 23 and pinch roll 25 of conveyance means 2A, and record according [the record form P which runs the interior material 20 top of a record-medium proposal by rotation of the conveyance roll 23 / on the discharge part 33 lower part of the advance way recording head 30 and] to a regurgitation ink droplet is performed. A recording head 30 is guided at the interior material 35 of a recording head proposal, and moves to the direction and scanning direction which intersect perpendicularly with a recording paper conveyance path. The recording paper P with which record was performed is discharged by the 2nd delivery roll 27 and spur 29 of conveyance means 2B on a paper output tray 40. Here, the pinch roll 25 of 1st conveyance means 2A is formed with the conductive material. The material which mixed conductive synthetic resin, such as polyacetal, as a conductive material is used.

[0011] A pinch roll 25 is held at the pinch roll cage 250, and the pressure welding is carried out to the conveyance roll 23. The pinch roll cage 250 has the attaching part 255 which attached the pinch roll 25 in the end, and other ends of an attaching part 255 are connected to the frame 251 through the spring 257. And by using as the supporting point the supporter 259 which fixes on a frame 251, an attaching part 255 is arranged free [rotation] and carries out the pressure welding of the pinch roll 25 to the conveyance roll 23. Moreover, the attaching part 255 is formed with the conductive ingredient which mixed conductive synthetic resin, such as polyacetal, and it connects with an earth wire 51 and it is grounded.

[0012] Thus, in order to convey the recording paper P down to the ink discharge part 33 of a recording head 30, feeding in the recording device of the ink jet method constituted operates the feed roll 15, and the conveyance roll 23 carries it. The recording paper P moves at this time, contacting a medium tray 10, and the chute member 21 and interior material of record-medium proposal 20 grade. A tray 10, chute 21, and the interior material 20 of a proposal are manufactured by resin in many cases, and the recording paper P is carrying out friction contact at these resin members, and they carry out static electricity electrification. Thus, the record form P electrified [the conveyance way and] is pinched by 1st conveyance means 2A. At this time, it manufactures by the conductive member, and the pinch roll cage 255 and a pinch roll 25 contact the recording paper which reached between the conveyance rolls 23, and remove static electricity on the recording paper P. The pinch roll cage 255 is energized by the spring 257, and while carrying out pinching conveyance of the form P passed certainly, Form P is discharged through the frames 251, such as a metal which contacted the pinch roll 25 and was grounded electrically, by considering as the structure of grounding electrically the frame 251 formed with a metal etc.

[0013] The form P discharged by 1st conveyance section 2A arranged in the upstream of the ink discharge part 33 of a recording head 30 is conveyed by the lower part of a recording head, and is recorded by the ink jet. And the record form P with which record was performed is pinched between the discharge roll 27 of 2nd conveyance means 2B, and a spur 29, and is discharged on the discharge tray 40.

[0014] According to the gestalt of this operation, the record medium P which carried out friction static electricity **** electrification in the process which is sent out from a medium tray 10 and runs a conveyance on the street is discharged as mentioned above by being inserted into the conductive pinch roll 25 applied on 1st conveyance section 2A arranged just before the ink discharge part 33 of a recording head 30, the conveyance roll 23, and a conveyance roll, and being conveyed. And under the ink discharge part 33 of a recording head 30, flight of regurgitation ink is stabilized and the printing turbulence on a record medium is prevented because it will be in the condition of low voltage (less than [**1500V-**2000V]) relatively.

[0015] In addition, in this equipment, the conveyance roll 23 is formed for a conductive material, and the effectiveness same also as a configuration of grounding the conveyance roll 23 electrically is attained.

[0016] gestalt of operation 2 — the electric discharge brush 50 is used in the gestalt of this operation (refer to drawing 3). The electric discharge brush 50 is arranged in the lower stream

of a river of 1st conveyance section 2A which consists of a conveyance roll 23 and a pinch roll 25. The electric discharge brush 50 is the downstream of 1st conveyance section 2A, and is arranged in the upstream of the ink discharge part 33 of a recording head 30. It is fixed to a frame etc. so that the tip may contact the record form P conveyed, and the electric discharge brush 50 is connected to an earth wire 51. In this case, a pinch roll 25 and the pinch roll cage 255 do not need to use a conductive material.

[0017] Also in this recording device, since the electric discharge brush 50 which contacts the record form P conveyed by the upstream of the ink discharge part 33, and discharges the charge on a form is arranged, the record form P conveyed under the ink discharge part 33 will be in the condition of low voltage (less than [**1500V-**2000V]) relatively, flight of regurgitation ink is stabilized, and the printing turbulence on a record medium is prevented. In addition, more positive electric discharge is attained by carrying out piece arrangement of the electric discharge brush for the upstream of the ink discharge part 33 in the gestalt of this operation, or arranging two or more electric discharge brushes between the lower streams of rivers of the delivery roll 27 from the upstream of the feed roll 15 in the location of arbitration.

[0018] gestalt of operation 3 — in the gestalt of this operation, conveyance of a record form is performed with the conveyance belt (refer to drawing 4). The conveyance belt 200 is laid between a drive roll 230 and the follower roll 270, and is arranged free [rotation]. The pinch roll 250 which turns into a drive roll 230 from the conductive material ****(ed) by the pinch roll cage 251 which consists of a conductive material, and the pinch roll cage 251 contacts, and is arranged. The pinch roll cage 251 is connected to the earth wire 51.

[0019] The record form P to which paper is fed from a medium tray is pinched by a drive roll 230 and the pinch roll 250, and is conveyed on a belt 200. The record form P is conveyed by the belt 200 and runs in the lower part of the ink discharge part 33 of a recording head 30. The form P in which record was performed in the ink breathed out is conveyed and discharged by the belt 200 from the ink discharge part 33.

[0020] Also in this equipment, since the record form P to which paper is fed on the conveyance belt 200 is in the condition that the charge on a form was discharged by the pinch roll 250 and the pinch roll cage 251, the record form P conveyed under the ink discharge part 33 is in the condition of low voltage (less than [**1500V-**2000V]) relatively, flight of regurgitation ink is stabilized, and the printing turbulence on a record medium is prevented.

[Translation done.]

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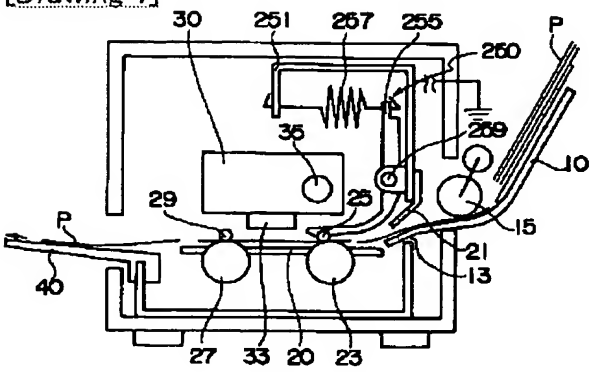
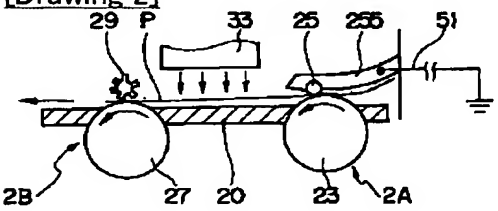
DRAWINGS

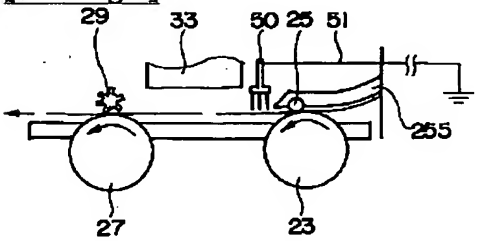
[Drawing 1]



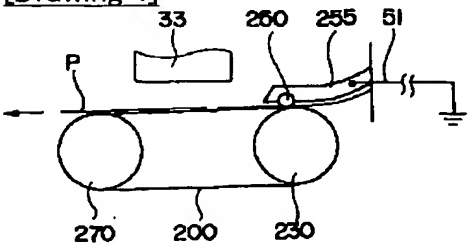
[Drawing 2]



[Drawing 3]



[Drawing 4]



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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The outline block diagram of the ink jet recording device which applies this invention.

[Drawing 2] The expansion explanatory view near the ink discharge part of a recording head.
[Drawing 3] The configuration explanatory view of the gestalt of other operations.
[Drawing 4] The configuration explanatory view of the gestalt of other operations.
[Description of Notations]
10 Medium Tray 13 Feed Opening 15 Feed Roll, 20 Interior material of a record-medium proposal 21 Chute member 23 Conveyance roll, 25 Pinch roll 27 Delivery roll 29 Spur, 30 Recording head 33 Ink discharge part 35 Interior material of a recording head proposal, 40 Paper output tray 50 Electric discharge brush 250 Pinch roll cage 251 Frame 257 Spring P Record medium (recording paper).

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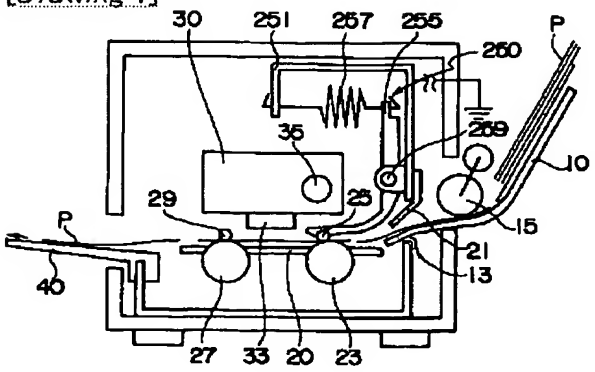
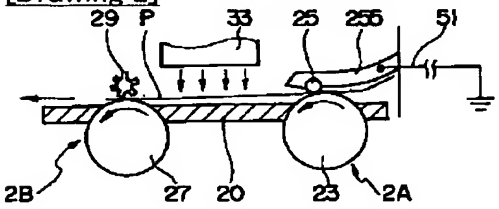
DRAWINGS

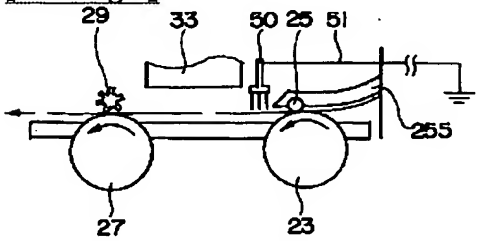
[Drawing 1]



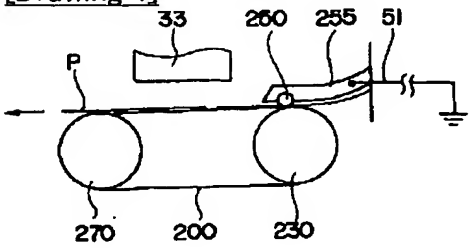
[Drawing 2]



[Drawing 3]



[Drawing 4]



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(19)日本国特許庁（ＪＰ）　(12) **公開特許公報**（Ａ）　(11)特許出願公開番号

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(43)公開日　平成10年(1998) 3月31日

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Ｂ４１Ｊ	2/01			Ｂ４１Ｊ	3/04	１０１Ｚ
	29/00			Ｂ６５Ｈ	5/00	Ａ
Ｂ６５Ｈ	5/00				5/06	Ａ
	5/06			Ｂ４１Ｊ	29/00	Ｓ

審査請求　未請求　請求項の数6　ＯＬ　（全 5 頁）

(21)出願番号　特願平8－239004

(22)出願日　平成８年(1996) ９月10日

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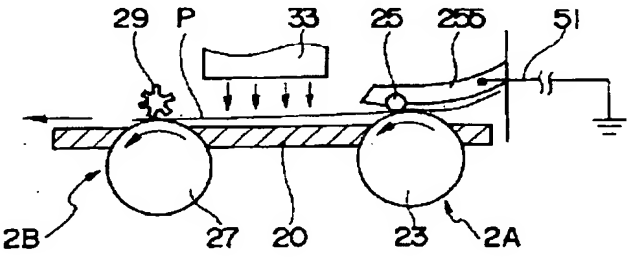
(54)【発明の名称】　インクジェット記録装置

(57)【要約】

【課題】　記録ヘッドでの記録を実行する前に、搬送途上で電荷を帯びた記録紙上の静電気を効率良く除去する。

【解決手段】　記録ヘッドのインク吐出部３３の上流側に配設する搬送ロール２３に圧接するピンチロール２５と、ピンチロールを保持する保持器２５５を導電性の材質とし、フレームを介して電気的に接地する。電荷をおびた記録紙Ｐは、搬送ロール２３と、搬送ロール上に掛かる導電性のピンチロール２５に挟まれて搬送されることによって除電され、記録ヘッド３０のインク吐出部３３下では、相対的に低電位の状態となることで、吐出インクの飛翔が安定し、記録媒体上の印字乱れが防止される。



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【特許請求の範囲】

【請求項１】　インクを吐出する記録ヘッドと、該記録ヘッドのインク吐出部に対向し、インク吐出部との間に間隙を設けて配設する記録媒体の搬送手段を有し、前記搬送手段上を搬送される記録媒体上にインクを吐出して記録を実行するインクジェット記録装置において、
前記記録媒体の搬送手段は、給紙部から送り出される記録媒体を記録ヘッド下部に搬送する搬送部を備え、前記搬送部はインク吐出部の上流側近傍に配設されると共に、導電性材で構成され電気的に接地されてなるインクジェット記録装置。

【請求項２】　前記搬送部は搬送ロールと搬送ロールに圧接するピンチロールと、ピンチロールの保持手段とを有し、少なくとも記録媒体に接触するピンチロールは導電性材よりなり、電気的に接地されてなる請求項１記載のインクジェット記録装置。

【請求項３】　インクを吐出する記録ヘッドと、該記録ヘッドのインク吐出部に対向し、インク吐出部との間に間隙を設けて配設する記録媒体の搬送手段を有し、前記搬送手段上を搬送される記録媒体上にインクを吐出して記録を実行するインクジェット記録装置において、
前記記録媒体の搬送手段は、給紙部から送り出される記録媒体を記録ヘッド下部に搬送する搬送部を備え、前記搬送部はインク吐出部の上流側近傍に配設されると共に、搬送部と記録ヘッドとの間に除電ブラシを配設し、前記除電ブラシは電気的に接地され、少なくとも先端は搬送される記録媒体面に接触するよう配設されるインクジェット記録装置。

【請求項４】　前記除電ブラシは搬送部の下流側の記録媒体の搬送経路上に複数個配設してなる請求項３記載のインクジェット記録装置。

【請求項５】　前記除電ブラシは導電性材よりなる搬送部の下流側にその先端を記録媒体に接触させて配設されてなる請求項３記載のインクジェット記録装置。

【請求項６】　インクを吐出する記録ヘッドと、該記録ヘッドのインク吐出部に対向し、インク吐出部との間に間隙を設けて配設する記録媒体の搬送手段を有し、前記搬送手段上を搬送される記録媒体上にインクを吐出して記録を実行するインクジェット記録装置において、
前記記録媒体の搬送手段は、ベルトを支持するロールと、ロールに回動自在に張架されるベルトと、ベルトを介してロールに圧接するピンチロールよりなり、
少なくともピンチロールは導電性材で構成されると共に、電気的に接地され、給紙部から送り出される記録媒体はベルトとピンチロール間に挟持されて除電され記録ヘッド下部に搬送されるよう構成してなるインクジェット記録装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、インクジェット記録装置に関し、特に記録媒体の搬送経路における記録用紙の除電機構に関する。

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【０００２】

【従来の技術】従来、紙、ＯＨＰ用シートなどの記録媒体（以下、記録紙と記する）に対して記録を行なうインクジェット記録装置における搬送経路の除電は、特開平４－９０３５４号公報に記載されている様に、搬送手段によって搬送される記録紙の、インク吐出部に対向する面の背面部に記録紙の走行案内部材を設け、この部材を導電性材料としたものがある。

【０００３】

【発明が解決しようとする課題】インクジェット記録装置に於ては、記録紙を搬送するために給紙ローラー、搬送ローラー、排紙ローラー等を用いるが、記録紙を搬送する為には、ローラーと記録紙との間に、搬送力（摩擦力）を与える付勢機構が必要である。このように搬送力を与えられた記録紙は、搬送路上を給紙口からインク吐出部に向けて搬送されるが、搬送路を形成するシュート部材としては、加工性能やコスト等の面から、樹脂材を用いることが多かった。樹脂材で形成される搬送路上を記録紙が走行すると、記録紙とシュート部材等との間に摩擦が生じ、記録紙が静電気によって電荷をおびる場合があった。

【０００４】静電気による電荷を帯びた状態の記録紙が記録部に到達し、吐出インクによる記録を実行すると、インク粒が吐出口を離れた瞬間に電荷が誘起され、特に近接した吐出口から同時に複数個のインク粒が吐出された場合には、記録紙に到達する前に同極に帯電したインク同志は反発し、狙いの軌跡をはずしてしまう為、記録紙上の所定の位置に記録されず、記録された文字や画像の形状が乱れたり、濃度むらになったりすることがあった。尚、上記の印字乱れが発生する記録媒体上の電位としては、ほぼ±１５００Ｖ～±２０００Ｖ以上になったときであることが実験値として求められている。

【０００５】上記不都合を解決する為に、記録紙上の静電気を除去する手段として、前述の特開平４－９０３５４号公報などが提案されている。しかしながら、この種インクジェット方式の記録装置において、インク吐出部に対向して配設される導電性材料を用いた記録紙案内部材は、インク吐出部に対して記録紙が通過できる間隔である１～２ｍｍの間隙を設けて配設しなければならない。この間隔が少なすぎると、記録紙が搬送されてきた際、記録紙とインク吐出部が接触して記録された文字や画像の形状が乱れたり、汚れたりしてしまう。そこで、通常はこの間隙を１．５ｍｍ程度に設定しているが、この間隙を通過途上の記録紙は案内部材に接触しない状態となることがあった。このように案内部材に接触しないと、電荷をおびている記録紙は、除電されずに印字部分を通過し、画質不良を発生させる可能性があった。そこで、インク吐出部下を通過する記録用紙の電荷を確実

に、しかも安価に除去する手段として、本発明では、インク吐出部直前に配設され、記録紙と確実に接触する搬送ロールと、搬送ロールに掛かるピンチロール間で除電するべく、ピンチロール及び、ピンチロールを保持する保持具を導電性の材質として、電気的に接地する構成としている。

【０００６】

【課題を解決するための手段】本発明のインクを吐出する記録ヘッドと、該記録ヘッドのインク吐出部に対向し、インク吐出部との間に間隙を設けて配設する記録媒体の搬送手段を有し、前記搬送手段上を搬送される記録媒体上にインクを吐出して記録を実行するインクジェット記録装置は、インク吐出部の上流側近傍に配設されると共に給紙部から送り出される記録媒体を記録ヘッド下部に搬送する搬送部を備え、該搬送部は導電性材で構成され電気的に接地されている構成を具備する。具体的には搬送部は搬送ロールと搬送ロールに圧接するピンチロールと、ピンチロールの保持手段とを有し、少なくとも記録媒体に接触するピンチロールが導電性材よりなり、電気的に接地されている。

【０００７】請求項３に記載のインクジェット記録装置の記録媒体の搬送手段は、インク吐出部の上流側近傍に配設され、給紙部から送り出される記録媒体を記録ヘッド下部に搬送する搬送部と、搬送部と記録ヘッドとの間に配設する除電ブラシを備え、除電ブラシは電気的に接地され、少なくとも先端は搬送される記録媒体面に接触するよう配設される構成を具備する。この除電ブラシは搬送部の下流側と第２の記録媒体の搬送経路上に複数個配設してもよいし、また、導電性材よりなる搬送手段の下流側に配設させてもよい。

【０００８】請求項６に記載のインクジェット記録装置は、ベルトを支持するロールと、ロールに回動自在に張架されるベルトと、ベルトを介してロールに圧接するピンチロールよりなる搬送手段を有し、少なくともピンチロールは導電性材で構成されると共に、電気的に接地され、給紙部から送り出される記録媒体はベルトとピンチロール間に挟持されて除電され記録ヘッド下部に搬送される構成を具備する。

【０００９】

【発明の実施の形態】

実施の形態　１

以下、図面を参照して本発明の実施例を説明する。図１は、本発明を適用するインクジェット記録装置の概略図、図２は図１中の、記録ヘッドのインク吐出部近傍の詳細図である。パーソナルコンピューター等、外部からの信号を受けたインクジェット方式の記録装置は、給紙ロール１５により給紙トレイ１０上の記録紙Ｐを用紙搬送路に送り出す。用紙搬送路は給紙口１３に配設されるシュート部材２１、搬送ロール２３とピンチロール２５よりなる第１の搬送手段２Ａと、排紙ロール２７と拍車２９よりなる第２の搬送手段２Ｂ、および記録媒体案内部材２０等よりなる。

【００１０】第１の搬送手段２Ａは記録ヘッド３０のインク吐出部３３の手前、上流側に配設され、第２の搬送手段２Ｂはインク吐出部３３の下流側に配設される。給紙ロール１５から送り出された記録用紙Ｐはシュート部材２１に案内されて給紙口１３から第１の搬送手段２Ａに供給される。第１の搬送手段２Ａの搬送ロール２３とピンチロール２５に挟持され、搬送ロール２３の回転により記録媒体案内部材２０上を進行する記録用紙Ｐは進行途上記録ヘッド３０の吐出部３３下部において吐出インク滴による記録が実行される。記録ヘッド３０は記録ヘッド案内部材３５に案内されて、記録紙搬送経路と直交する方向、走査方向に移動する。記録が実行された記録紙Ｐは第２の搬送手段２Ｂの排紙ロール２７と拍車２９とにより排紙トレイ４０上に排出される。ここで、第１の搬送手段２Ａのピンチロール２５は導電性素材により形成されている。導電性素材としてはポリアセタール等の導電性合成樹脂を混合した素材を用いている。

【００１１】ピンチロール２５はピンチロール保持器２５０に保持されて、搬送ロール２３に圧接されている。ピンチロール保持器２５０は、ピンチロール２５を一端に取り付けた保持部２５５を有し、保持部２５５の他の一端はスプリング２５７を介してフレーム２５１に連絡されている。そして、保持部２５５はフレーム２５１に固着する支持部２５９を支点として回動自在に配設され、ピンチロール２５を搬送ロール２３に圧接させている。また、保持部２５５はポリアセタール等の導電性合成樹脂を混合した導電性材料で形成されており、アース線５１に接続して接地されている。

【００１２】このように構成されるインクジェット方式の記録装置における給紙は、記録ヘッド３０のインク吐出部３３下へ記録紙Ｐを搬送するために、給紙ロール１５を作動させて、搬送ロール２３まで運ぶ。この時、記録紙Ｐは給紙トレイ１０や、シュート部材２１、記録媒体案内部材２０等に接触しながら移動する。トレイ１０、シュート２１、案内部材２０は、樹脂で製作されることが多く、記録紙Ｐはこれらの樹脂部材に摩擦接触することで、静電気帯電する。このように搬送途上、静電気を帯びた記録用紙Ｐは、第１の搬送手段２Ａに挟持される。このとき、導電性部材で製作しピンチロール保持器２５５及びピンチロール２５は、搬送ロール２３との間に到達した記録紙に接触し、記録紙Ｐ上の静電気を除去する。ピンチロール保持器２５５は、スプリング２５７で付勢されて、確実に通過する用紙Ｐを挟持搬送すると共に、金属等により形成されるフレーム２５１を電気的に接地させる構造とすることにより、用紙Ｐはピンチロール２５に接触して電気的に接地された金属等のフレーム２５１を介して除電される。

【００１３】記録ヘッド３０のインク吐出部３３の上流

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側に配設される第１の搬送部２Ａにより除電された用紙Ｐが記録ヘッドの下部に搬送されてインクジェットにより記録される。そして、記録が実行された記録用紙Ｐは、第２の搬送手段２Ｂの排出ロール２７と拍車２９間に挟持されて排出トレイ４０上に排出される。

【００１４】以上のようにこの実施の形態によると、給紙トレイ１０から送り出され搬送路上を走行する過程で、摩擦静電気よる帯電をした記録媒体Ｐは、記録ヘッド３０のインク吐出部３３直前に配設された、第１の搬送部２Ａ、搬送ロール２３と搬送ロール上に掛かる導電性のピンチロール２５に挟まれて搬送されることによって除電される。そして、記録ヘッド３０のインク吐出部３３下では、相対的に低電位（±１５００Ｖ～±２０００Ｖ以下）の状態となることで、吐出インクの飛翔が安定し、記録媒体上の印字乱れが防止される。

【００１５】なお、この装置において、搬送ロール２３を導電性素材で形成し、搬送ロール２３を電気的に接地させる構成としても同様の効果が達成される。

【００１６】実施の形態　２

この実施の形態においては、除電ブラシ５０を用いている（図３参照）。搬送ロール２３とピンチロール２５よりなる第１の搬送部２Ａの下流に除電ブラシ５０を配設する。除電ブラシ５０は第１の搬送部２Ａの下流側であって、記録ヘッド３０のインク吐出部３３の上流側に配設される。除電ブラシ５０は搬送される記録用紙Ｐにその先端が接触するようにフレーム等に固定され、アース線５１に接続される。この場合においては、ピンチロール２５、およびピンチロール保持器２５５は導電性素材を用いなくともよい。

【００１７】この記録装置においても、インク吐出部３３の上流側には搬送される記録用紙Ｐに接触して用紙上の電荷を除電する除電ブラシ５０を配設しているので、インク吐出部３３下に搬送される記録用紙Ｐは相対的に低電位（±１５００Ｖ～±２０００Ｖ以下）の状態となり、吐出インクの飛翔が安定し、記録媒体上の印字乱れが防止される。なおこの実施の形態においては除電ブラシをインク吐出部３３の上流に一個配設しているか、給紙ロール１５の上流から排紙ロール２７の下流の間に任意の位置に複数個除電ブラシを配設することによりより確実な除電が達成される。

【００１８】実施の形態　３

この実施の形態においては、記録用紙の搬送を搬送ベルト

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トにより実行している（図４参照）。搬送ベルト２００は駆動ロール２３０と従動ロール２７０間に張架されて回動自在に配設されている。駆動ロール２３０には導電性素材よりなるピンチロール保持器２５１、およびピンチロール保持器２５１に保設される導電性素材よりなるピンチロール２５０が接触して配設されている。ピンチロール保持器２５１はアース線５１に接続されている。

【００１９】給紙トレイから給紙される記録用紙Ｐは駆動ロール２３０とピンチロール２５０に挟持されてベルト２００上に搬送される。記録用紙Ｐはベルト２００に搬送されて記録ヘッド３０のインク吐出部３３の下部に進行する。インク吐出部３３から吐出されるインクにより記録が実行された用紙Ｐはベルト２００に搬送されて排出される。

【００２０】この装置においても、搬送ベルト２００上に給紙される記録用紙Ｐは、ピンチロール２５０、およびピンチロール保持器２５１により用紙上の電荷が除電された状態となっているので、インク吐出部３３下に搬送される記録用紙Ｐは相対的に低電位（±１５００Ｖ～±２０００Ｖ以下）の状態であって、吐出インクの飛翔が安定し、記録媒体上の印字乱れが防止される。

【００２１】

【発明の効果】以上のように、本発明によれば、記録媒体上の静電気を、印字乱れが発生しないレベルの電位に常に保てることにより、吐出インクの飛翔が安定し、静電気による印字乱れが防止される。

【図面の簡単な説明】

【図１】　本発明を適用するインクジェット記録装置の概略構成図。

【図２】　記録ヘッドのインク吐出部近傍の拡大説明図。

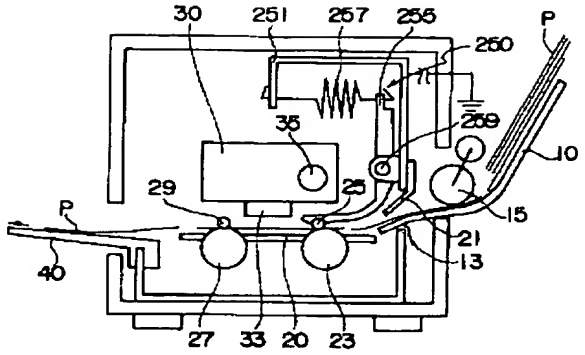
【図３】　他の実施の形態の構成説明図。

【図４】　他の実施の形態の構成説明図。

【符号の説明】

１０　給紙トレイ、　１３　給紙口、　１５　給紙ロール、　２０　記録媒体案内部材、　２１　シュート部材、　２３　搬送ロール、　２５　ピンチロール、　２７　排紙ロール、　２９　拍車、　３０　記録ヘッド、　３３　インク吐出部、　３５　記録ヘッド案内部材、　４０　排紙トレイ、　５０　除電ブラシ、　２５０　ピンチロール保持器、　２５１　フレーム、　２５７　スプリング、　Ｐ　記録媒体（記録紙）。

【図１】


30
251
257
255
P
260
35
259
10
29
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15
P
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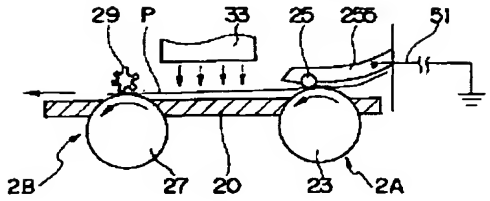
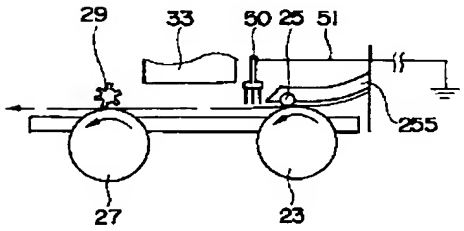
23

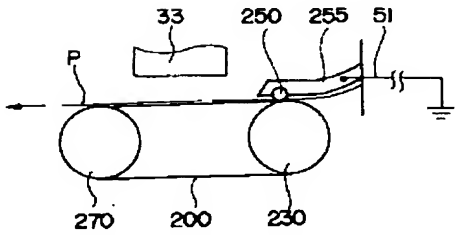
【図２】


29
P
33
25
255
51
2B
27
20
23
2A

【図３】


29
33
50
25
51
255
27
23

【図４】


33
250
255
51
P
270
200
230